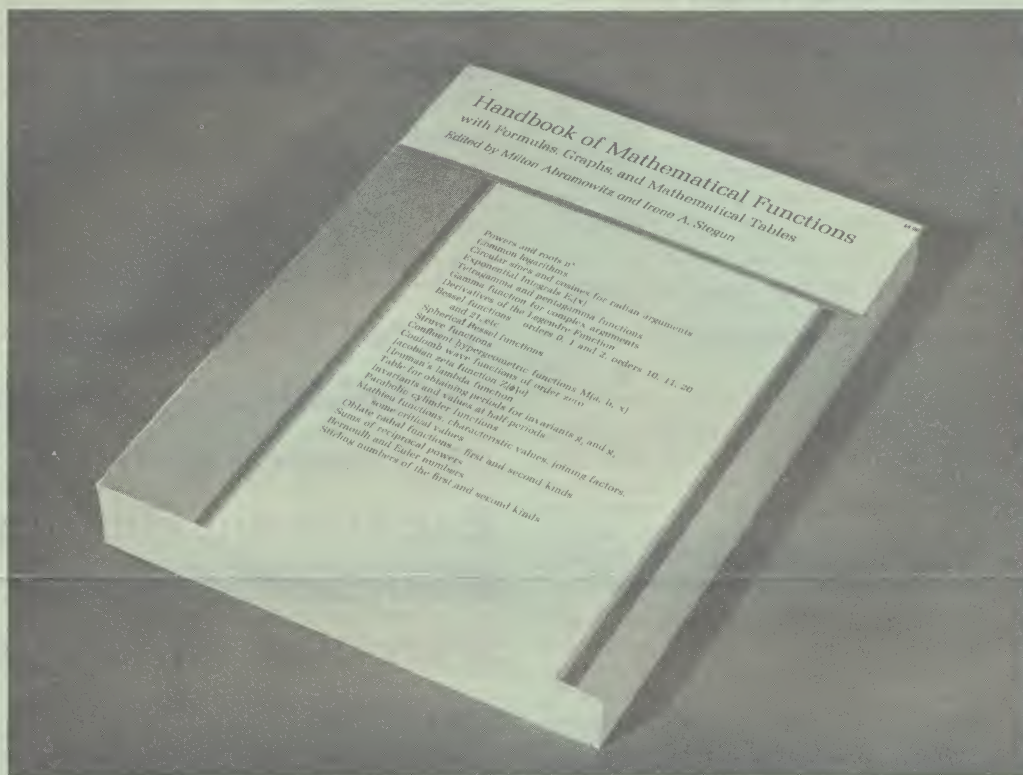


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Besides these new chapters, the book has a new preface by the author; many figures have been added; the list of symbols has been augmented, textual errors corrected, and a supplementary index included. The reavailability of this work, with its added material, should go a long way toward filling a serious gap in the field.

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This book provides a broad, non-mathematical survey of the field. It covers the nature of impulsive loading, the conditions under which it can develop, and some of the main phenomena involved when materials, particularly metals, are subjected to such loads. After background discussion of general effects of impulsive loading upon the properties of materials and of the basic laws concerned, the authors examine such topics as: fundamental properties of high explosives and the dynamics of explosions; general features of loads and forces operative within idealized impact systems and simplified metal-explosive systems; macroscopic aspects of fracturing and plastic deformation in impulsive loading; changes in microstructure, such as grain distortion, banding, twinning, etc.; and other matters.

Two interesting chapters go into non-photographic and high-speed photographic apparatus and observation procedures; there is also an informative coverage of engineering practices and the behavior of practical impact systems together with their industrial and military applications. Throughout the book, there are many illuminating interpretations of impulsive loading effects that are quite unique and useful.

Wide in scope, admirably lucid, and never losing the reader in a quagmire of detail, the book provides a solid general introduction to both physical and engineering aspects of the field. Design engineers, students and workers in aero-, hydro-, and thermodynamics, ordnance researchers, metallurgists, and others will find this a book of high interest.

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Professor O'Rahilly points out inadequacies and inconsistencies in various "established" views and concepts, such as the notion of displacement current in Maxwell's equations and Lorentz's "local time," and in theories of Heaviside, Kelvin, Einstein, Minkowski, J. J. Thomson, Hertz, Poynting, Weyl, and others. Extensive reference is made to primary sources (with much directly quoted material) in these analyses.

And there are closely reasoned arguments in support of ideas which the author believes have not had adequate hearing: the proposals of Lorenz and Riemann (in lieu of Maxwell's displacement current), and contributions of Ritz, Gauss, Weber, Duhem, and others. The author also rejects the priority of the concepts of electric and magnetic fields and makes a strong case instead for the Lienard-Schwarzschild force-formula. Other discussions include an exposition of the meaning of the symbols of physics and an interesting chapter on units and "dimensions."

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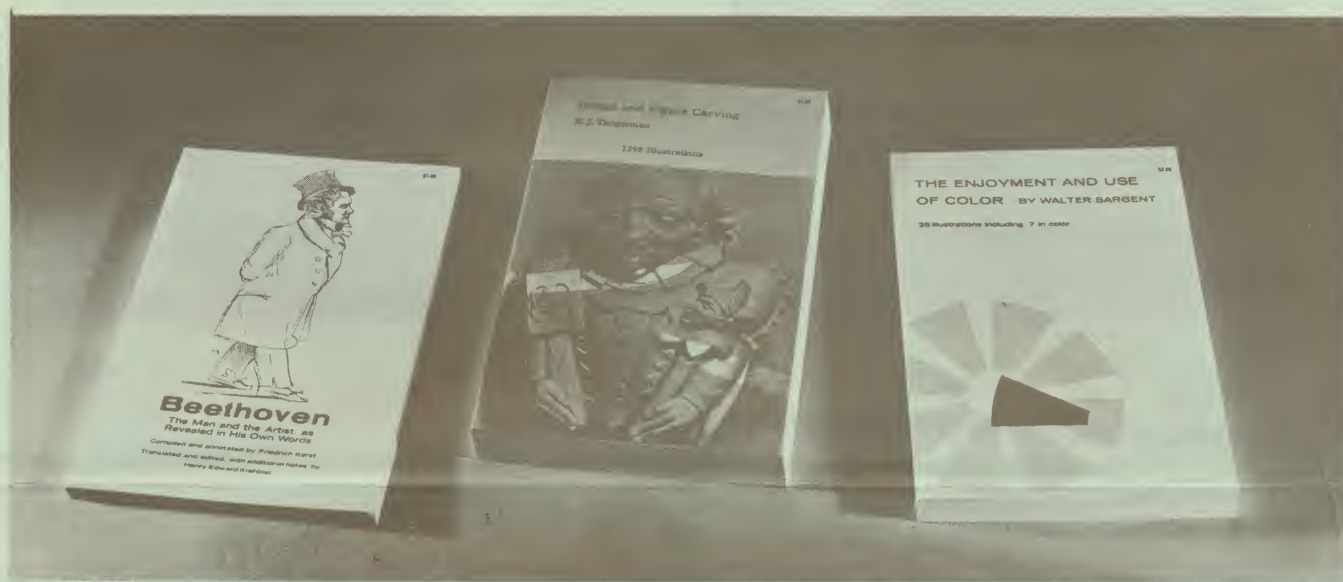
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102. Famous artists always labor under an embarrassment;—therefore first works are the best, though they may have sprung out of dark ground. [From the Conversation-book of 1820.]

111. Handel is the unattained master of all masters. Go and learn from him how to achieve vast effects with simple means. [Reported by Seyfried.]

58. I am not in the habit of rewriting my compositions. I never did it because I am profoundly convinced that every change of detail changes the character of the whole. [February 19, 1813, to George Thomson, who had requested some changes in compositions submitted to him for publication.]

132. Rossini would have become a great composer if his teacher had frequently applied some blows *ad posteriora*. [Reported by Schindler. Beethoven had been reading the score of "Il Barbiere de Seviglia".]

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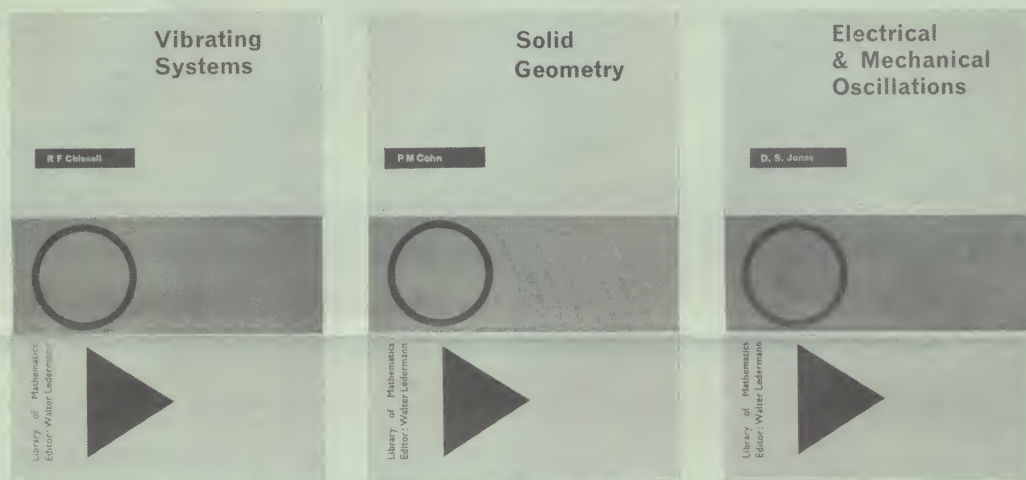
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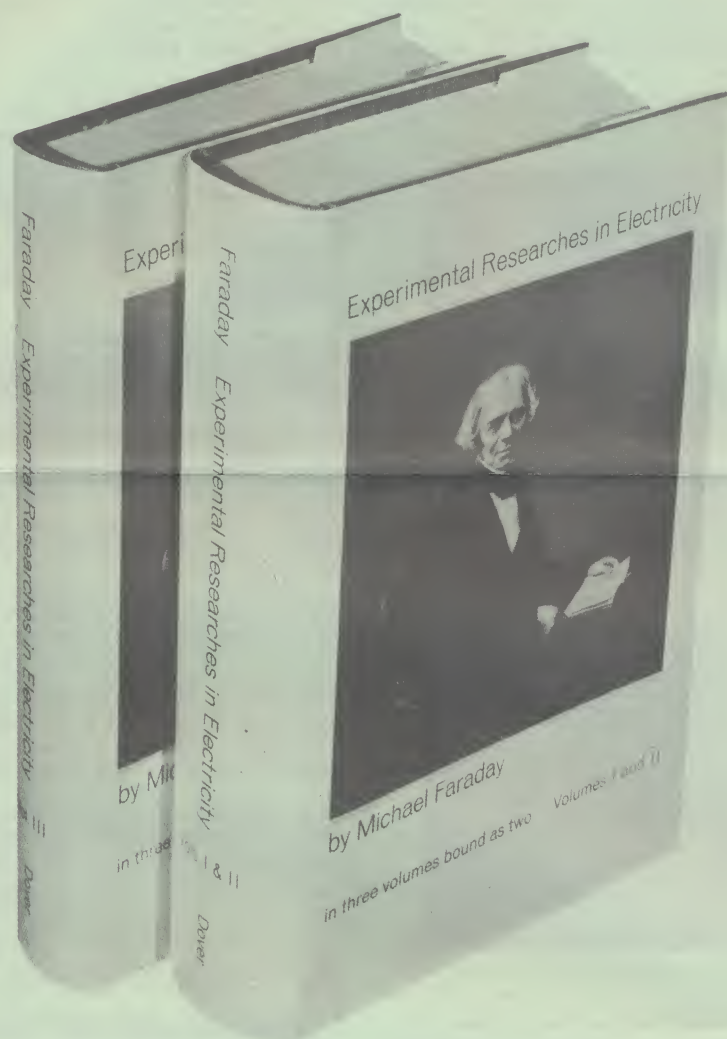
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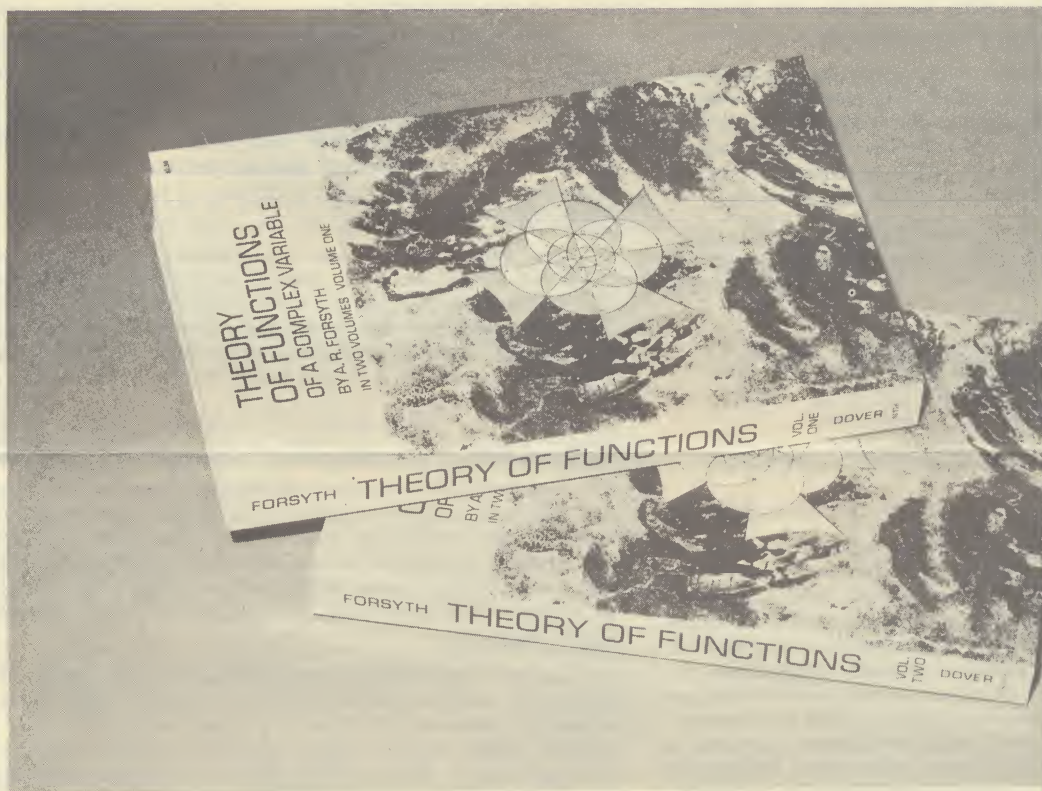
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Gerolamo Cardano (1501-1576) was a phenomenon by any standards. Even more so than many of his learned contemporaries, he was actively engaged in a dozen different fields at once. He was the most fashionable physician of his time, second in skill only to Vesalius; the author of a major classic in autobiographical writing ("The Book of My Life," Dover \$1.60); a dabbler in spiritualism; an astrologer who once cast the horoscope of Jesus; an alchemist; and, the most widely read popularizer of science in the 16th century—all in a single lifetime!

He was also a devoted gambler whose mathematical genius devised rules of probability which, while basically simple, nonetheless constitute the first organized study of the theory of games of chance ever prepared. This "Book on Games of Chance" appeared a century before Pascal. The complete text, translated from the Latin by Sydney H. Gould and with a clarifying analysis by Professor Ore (a Sterling Professor of Mathematics at Yale University), appears as an appendix to this study.

The bulk of the book vividly reconstructs Cardano's stormy life, his enigmatic personality, the scholarly disputes of which he was always a part, the tools, games and equipment that were part of the gambler's vocation in 16th-century Italy, and the science of gambling that Cardano tried to formulate. Extremely well written, with wit and a sure sense of historical background and setting, Professor Ore's book will appeal to many modern readers, from mathematicians and enthusiasts of such math recreations as puzzles and the laws of chance, to lay readers who may be curious about an unsung aspect of life in the Renaissance or about the activities of one of the era's important, yet little known, figures.

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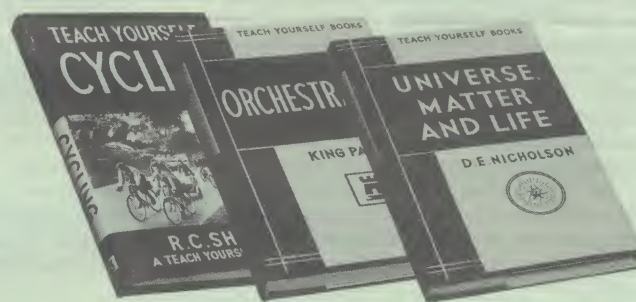
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Avarice  
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Justice

The Last Judgment  
The Death of the Virgin

The Descent into Limbo  
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The text describes what is happening in each plate, explains details of subject and technique that you should know about in order to appreciate the work to the fullest. The notes also provide bits of biography, information on the etcher or engraver, comparisons with Bruegel's original designs, and other aspects of art history and background.

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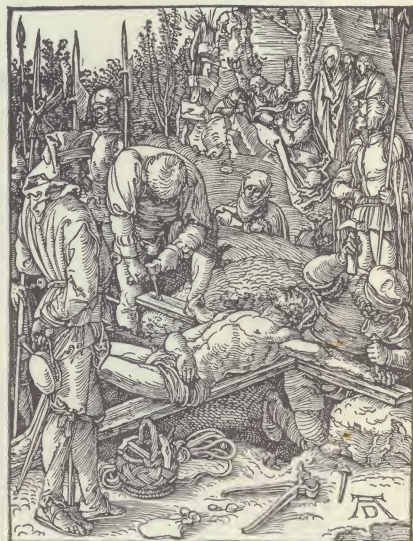
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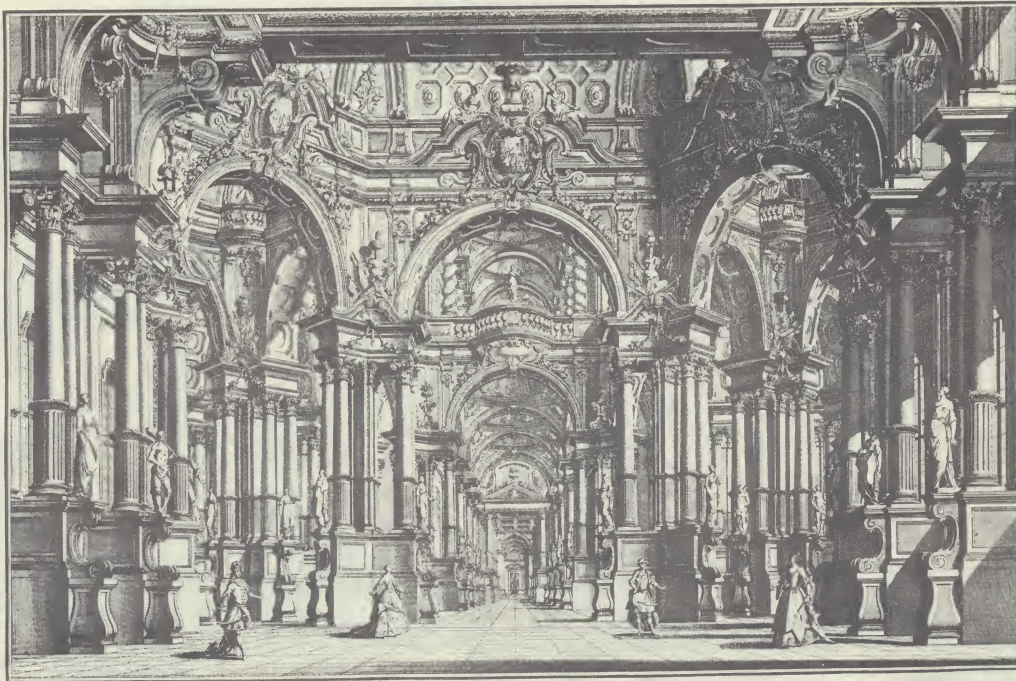
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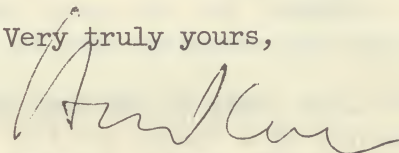
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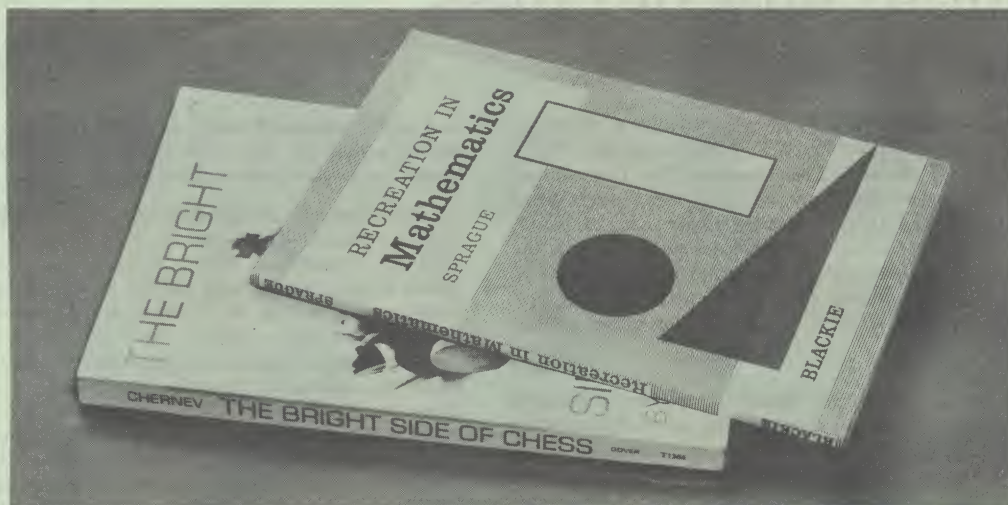


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If you're one of the steadily growing number of math puzzle addicts who can't resist the challenge of grappling with problems like the ones above, then this assortment is definitely one you'll want to add to your library. 30 gripping battles of wits, designed to intrigue, torment, infuriate . . . and also to provide hour upon hour of stimulating and rewardingly spent leisure time.

#### Some of these may stump you!

These are not run-of-the-mill, easy to locate puzzles. A few have had limited circulation in highly specialized publications, but the majority are new problems which cannot be located elsewhere. All of them have some novel twist.

Designed for experienced puzzle fans, these posers are tricky and difficult, not breeze-throughs. In fact, if you can solve problem no. 22, you may well be the very first person in the world ever to do so. Tips for how to proceed in wrestling with this particular stumper are provided in the solutions section.

While most of the problems do not require any advanced training in mathematics, they do require clear thinking, the ability to carry out sequential reasoning, and great perseverance. If you're the type of person who does not give up easily, this collection is one you'll especially enjoy.

The 30 problems are extremely varied, each calling for different mathematical and thought processes. Included in this selection are problems involving the binary number systems, passing a larger cube through a hole in a smaller one, the dissection of a right-angled triangle, the harmonic series, and many other aspects of mathematics.

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Unlike many other collections which might provide only the answers or answers plus full solutions for only a few sample problems, this assortment comes complete with fully worked out solutions to all problems. Diagrams and charts are included where they will make it easier to follow the thought processes or mathematical methods employed. Several of the solutions are longer than a page and one explanation (to problem no. 23) is a full four pages long. The ingenuity of the solutions is often as fascinating as the problems themselves.

Whether mathematics is your field or just a casual pastime, we're sure you'll find a special thrill in pitting your skills against these tantalizing problems. And once you've taken up the challenge, you'll find it hard to break away. Professor Sprague's puzzles, translated into English by T. H. O'Beirne, offer every puzzle fan and mathematically inclined reader hours of recreational fun and relaxation.

A Dover import. Foreword by the author. 30 problems and full solutions. 21 figures. Bibliography. 61pp. 5¼ x 7¾. Paperbound \$1.00

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# THE BRIGHT SIDE OF CHESS

by Irving Chernev

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Irving Chernev's books on chess ("Combinations: The Heart of Chess," "Logical Chess, Move by Move," "Practical Chess Endings," "The 1000 Best Short Games of Chess," "The Russians Play Chess," and "Chessboard Magic!" among others) have won him the reputation of being the Arch-Connoisseur of Chess—a master player who can write humorously and instructively for anyone who takes an interest in the game, from the casual fan to the serious student. Here is another of Mr. Chernev's entertaining volumes, filled with anecdotes and epigrams, problems and endings, as well as outstanding games played by the masters.

In his introduction to the book, Fred Reinfeld describes Chernev's deep love for chess and his desire to communicate this excitement to his readers: "Chernev cannot bear to make the acquaintance of an exquisite endgame composition without carefully noting down its details in one of the many little black books he always carries about with him. (There is a little black book for games, one for endings, one for problems, one for anecdotes, one for curious chess facts...)." In this delightful volume, Chernev has emptied all of these little black books and has compiled a volume of extraordinary interest and variety.

There are fascinating problems (special favorites of Chernev's) and marvelous endgame compositions by such wizards as Korolkov. Checkover, Herbstmann, Rinck, Kubbel and Selsniev. Then there is a sec-

tion called Flights of Fancy, in which there are some delightful examples of help-mates and maximumers—problems in which Black must always make the longest move on the board.

Of special interest of course is the Games Section. Under the heading "Bright Games," there are 50 brilliancies of such great masters as Alekhine, Capablanca, Keres, Tarrasch, and Euwe, as well as inspired pieces of play by less well known players. Chernev particularly takes delight in revealing his discoveries of unknown masterpieces. Five extraordinary classic games follow—ones which the critics of an earlier age considered Immortal Gems. Here is the Anderssen-Kieseritzky battle, the celebrated game between Anderssen and Dufresne at Berlin, Morphy's brilliant victory over Paulsen, the Morphy-Bird struggle ("generally recognized as the most brilliant of Morphy's masterpieces"), and Zukertort's stunning defeat of Blackburne. Chernev follows this section with ten games which win his nomination for the ten most brilliant games ever played. The players' subtle ideas are revealed for the reader in the author's expert annotations.

This book will provide many hours of lively entertainment for the chess enthusiast who enjoys solving problems, playing over master games, or reveling in anecdotes about the famous.

Unabridged, unaltered republication of 1948 edition. Introduction by Fred Reinfeld. Index of Openings. 166 illustrations. 100 problems and solutions. xii + 175pp. 5½ x 8. Paperbound \$1.00

# COMMON SENSE IN CHESS

by Dr. Emanuel Lasker

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From the day when he won the World's Chess Championship from Steinitz in 1894 to his defeat by Capablanca in 1921, Emanuel Lasker reigned as the undisputed chess genius of the world. Though surely his unique talent cannot be transmitted, the basic principles upon which his chess mastery was based are outlined clearly and succinctly for the benefit of all chess enthusiasts in his "Common Sense in Chess."

Lasker regarded chess as neither a game, nor a science or art, but rather as the supremely thrilling battle between two minds—a war in which the chess pieces serve as the opposing troops and the minds of the players serve as the vying generals. In this book, based on a series of lectures delivered by the champion to an audience of London chess players, Lasker explains the three types of move open to the chess player: development, attack, and defense. Throughout, he guides the reader to develop his own individual proficiency through the use of common-sense principles rather than by memorizing numerous combinations of moves.

After developing basic principles of opening play in the first lecture, Lasker illustrates these with various openings (Ruy Lopez, Evan's Gambit, King's Bishop's Gambit, and the French Defense), indicating

by means of logical analysis the advantages and disadvantages of a variety of moves and countermoves. Next he describes the attack, with games from Morphy, Anderssen, Steinitz, Tarrasch, and his own game against Blackburne illustrating the basic principles set forth. The ninth lecture develops the principles of defense and lectures 10-12 are devoted to endgame strategy.

Since the lectures were designed for chess players, rudimentary definitions and rules are dispensed with; however, the common sense approach gives this book an extremely wide appeal and anyone who understands the fundamentals of the game will read this book with pleasure and with profit, whether his skill be elementary or advanced.

This is Lasker's famous course exactly as he presented it, without addition or alteration by other writers who might destroy both the clarity of his exposition and the unique charm that emerges from his writing. It was generally recognized during his lifetime that Lasker was one of the finest writers in the history of chess, and his stature as an author still remains unchallenged.

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## 100 GREAT PROBLEMS OF ELEMENTARY MATHEMATICS:

Their History and Solution

by Heinrich Dörrie

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One of the most fascinating aspects of the study of mathematics is the often astonishing simplicity of the solutions to complex problems. Any reader, from the high school math student to the professional mathematician, who delights in the thought processes behind such solutions will find this book especially appealing. The incredible and exciting triumphs of the mathematical mind are presented here through 100 celebrated problems of elementary mathematics and their ingenious solutions. A compelling picture emerges from these pages, one that reveals the amazing variety of mathematical methods and bears witness to some of the more extraordinary minds of history: Archimedes, Isaac Newton, Leonhard Euler, Augustin Cauchy; Pierre Fermat, Carl Friedrich Gauss, Gaspard Monge, Jacob Steiner and many others.

How can you calculate the logarithm of a given number without the use of the logarithm table? or the angles of a triangle from the sides without tables? What is the maximum number of days that a comet can remain within the earth's orbit? How is a sundial constructed? the exact position of a ship at sea determined? On what day of the year is the twilight shortest at a place of given latitude? How must a sailboat tack with a north wind in order to get north as quickly as possible? How many ways can  $n$  married couples be seated about a round table in such a manner that there is always one man between two women and none of them is ever next to his own wife?

These are but a few of the important historical puzzlers offered and solved in this unusual volume. Grouped into six categories, there are 26 arithmetical problems, 15 planimetric problems, 25 classic puzzles concerning conic sections and cycloids, 10 stereometric problems, 12 nautical and astronomic posers, and 12 maxima and minima problems. In addition to defining the questions and giving full solutions and proofs, the author recounts their origins and history and discusses the personalities associated with them. Often he gives not the original solution but one or two simpler or more interesting demonstrations.

**Advanced math theorems not required!**

To make this book appealing to a wide variety of readers, the author has restricted the selection of problems to those involving only elementary math. Thus, those readers who lack the time or opportunity

to acquaint themselves in detail with the principles of higher mathematics can still follow this book with pleasure and understanding. In a very few special instances, for example the problems of skew lines and the Euler tetrahedron, the author gives solutions which utilize simple concepts of vector analysis, because the advantages of this method are so obvious in terms of brevity and clarity. Other than these few rare exceptions, however, the solutions throughout the book assume only a knowledge of elementary theorems.

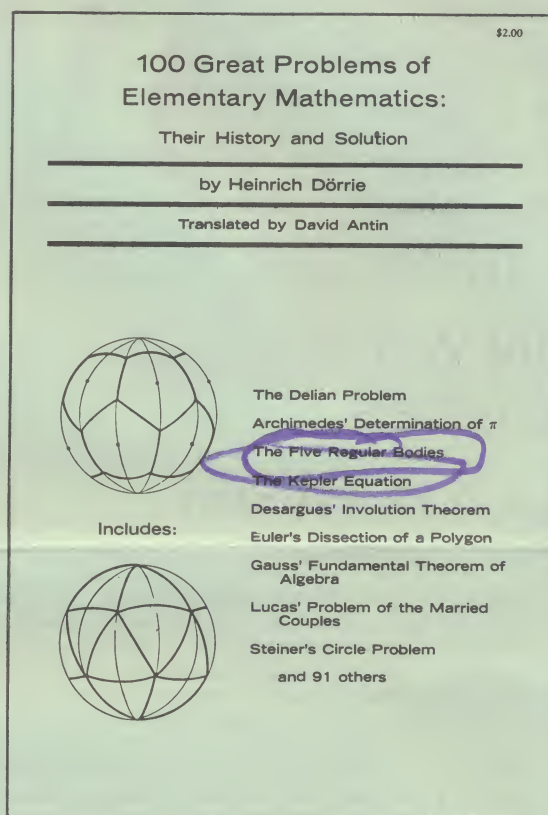
Some of the more striking and intriguing items are: Archimedes' "Problema Bovinum"; Euler's problem of polygon division; Omar Khayyam's binomial expansion; Archimedes' squaring of a parabola; Cauchy's mean theorem; Newton's exponential series, possibly the most important series in mathematics; Andre's derivation of the secant and tangent series, by the method of zigzag permutations; the famous Fermat-Euler prime number theorem; the quadratic reciprocity law (or the Euler-Legendre-Gauss theorem), one of the most important theorems of number theory; the trisection of an angle, solved here by means of the paper strip construction of Archimedes and by means of a fixed hyperbola by the Greek mathematician Pappus; Desargues' homology theorem; Archimedes' calculation of the number  $\pi$ , which enabled him to measure the circle (the most famous of his many achievements); Pascal's hexagon theorem; Hipparchus' stereographic or polar projection; the Mercator projection; the Kepler Equation; and Steiner's ellipse, circle, and sphere problems.

### First English translation!

The publication of this volume is good news for the math world: Dörrie's famous German text, "Triumph der Mathematik," has at last been translated into English. Prepared especially for this inexpensive paperbound Dover edition by David Antin, this translation makes this valuable and important work available to the English-language audience for the very first time.

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*His lady was lovely with glamour galore,  
She led him one day to a lingerie store.  
A dozen of these and two dozen of those  
Transparently feminine silk so-and-so's  
Would cost him, they said, six bucks less, if you please,  
Than a dozen of those and two dozen of these.  
Such extravagance, though, was way out of his reach,  
He'd only six bucks, which just bought one of each.  
Ignoring the frowns and 'tut-tuts' of the grundies,  
Just figure the price of each item of undies.*

If you are not already a devotee of the math puzzle as an intriguing source of leisure-time entertainment, you may be surprised to find an algebraic problem lurking in the guise of a humorous verse about women's lingerie. Perhaps you've watched someone engaged in a battle of wits with a strange-looking multiplication problem with only some of the digits filled in; possibly you've seen secret-code addition problems where letters substitute for numbers. If you've managed so far to escape the compelling fascination of these and many other kinds of math puzzles, this varied and ingenious collection is sure to hook you.

"Murder on the River," "A Man and His Sorrow," "She Married Them Off," and other tales; rhymed nonsense such as "Payment Past Due" and "The Ballad of Ballygan"; the tongue-twister "Milly Miffin's Muffins" and dozens of equally imaginative coverings dress up 150 tantalizing math problems which require no more than high school mathematics and yet still can delight and perplex even the professional mathematician.

Every conceivable type of mathematical recreation is represented here: rate, time, distance problems; age problems; money problems; skeleton sums; problems involving geometry and elementary algebra, or just plain straight thinking. And there are unique one-of-a-kind problems, too. All of them are inventively worded, couched in wry, witty, or outlandish anecdotes that are almost as much fun as the problems themselves.

What's more, this is the first book collection ever made of Mr. Hunter's special brand of brain teaser. The author is a member of the Mathematical Association and, as the greatest math puzzle-maker around, he has a large and dedicated following of puzzle-addicts who share his knowledge that figures can be fun. In its first paperback reprint, this ingenious collection offers hours of entertainment for all mathematically-inclined readers, whether their math training stopped at grade 12 or with a Ph. D. 15 typical solutions, worked out in detail, are provided for the novice, while a complete set of answers is given for those who need corroboration of their results. At once stimulating and relaxing, these puzzles are certain to give pleasure, dangerously likely to become habit-forming.

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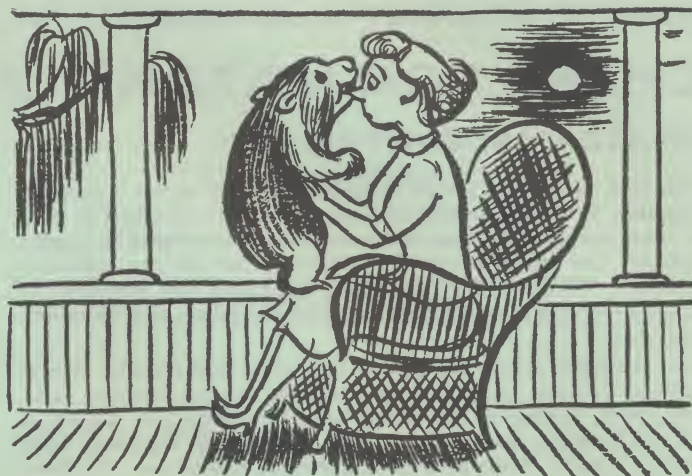
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The volume is made up mostly of items which first appeared in the Saturday Evening Post and the New Yorker, magazines to which Cuppy was an extremely popular contributor for many years. Mr. Cuppy gives us his "authoritative" views on various mammals, insects, birds, and so on, tossing out such fascinating facts as "a decapitated salamander cannot make quick decisions" and such vital track and field statistics as "the snail can do the hundred-yard dash in 30 hours flat." Now, how have you managed to get by so long without these important items of information?

In addition to his three pieces on wombats ("Wombats," "More About Wombats," and "Are Wombats People?"), there are articles on Mammals for Beginners (mouse, squirrel, etc.); Advanced Mammals, such as tapirs and yaks; Problem Mammals ("A few marsupials have no

abdominal pouch and are therefore hard to identify. If you have one, however, there is no doubt about what you are."); Octopuses and Those Things; Birds Who Can't Even Fly, in which Cuppy dispels the age-old myth that the kiwi's egg is larger than the kiwi herself; Birds Who Can't Sing and Know It; etc. There are also longer essays, including "The Poet and the Nautilus," "How to Swat a Fly"—basic rules of this occult science, and "Swan-Upping, Indeed!" Interspersed through the text are 100 delightfully droll illustrations drawn by Ed Nofziger, which have had a good share in giving the book its reputation for rib-tickling fun.

"One of his best . . . recommended to all and sundry, as Will would say," E. F. Walbridge, Library Journal. "You may not learn much about wombats in this book . . . but you will be able to have a fine time reading it," Frank Sullivan, N. Y. Herald-Tribune. "One of those rare writers who can make nonsense, delightful, warming nonsense out of the most unlikely subjects . . . deadly spoofing of the human race," Chic. Tribune.

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This is the first paperback edition of Israel Zangwill's famous novel of the London ghetto, "The King of the Schnorrers." Zangwill (1864-1926) was regarded during his writing career every bit the equal of his contemporary countrymen, Shaw, Chesterton, and Belloc, and we have in this book a prime example of his writing talent and keen eye for individual foibles and pretensions.

Zangwill's novels and tales were tremendously popular in his day, and they were almost always greeted with high critical praise. "The King of the Schnorrers" is an early (1894) success which set the greater part of London to laughing and comes down to us as one of Zangwill's most enduring works. It is a comic novel that must be considered as a minor classic.

With great satirical perception and an unerring sense of wry, preposterous humor, the author recounts the adventures of Menassah Bueno Barzillai Azevedo da Costa, a proud, infinitely resourceful Sephardic schnorrer (beggar) who lords it over his fellow mendicants in London of the late 1790s. His quick wit and persuasive tongue put him in the top rank of the aristocracy of schnorrers, and make

him one of the most intriguing characters you'll meet in literature. His exploits provide us with memorable, supremely enjoyable reading.

Treated purely as a story of a fascinating individual and his doings, the book is robust and often hilarious. It is also firmly placed in a skillfully realized historical mise en scene, perhaps the most picturesque period and setting of Anglo-Jewish history; and it is peopled with deeply etched and truly original characters. But Zangwill's deepest concerns were tolerance and understanding, and his writing is wise as well as witty. It pointedly satirizes the prejudices that divided the Jewish community against itself and it underscores that special kind of humor that attacks folly with folly.

This complete, unabridged edition includes an informative historical-critical introduction to Zangwill and to this book. Prepared especially for Dover, it was written by the author of the definitive study of Zangwill's life and work, Dr. Maurice Wohlgelemler.

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After a chapter containing general suggestions and remarks, Winter gives an extensive catalog of openings and defenses, dividing them into Open, Semi-open, and Close, as a convenience for positional and combination players. Dozens of openings and variations—from Queen's Gambit to the rarely-used Philidor's Defence—are described, and the aims, pros and cons, and techniques of each are indicated. He doesn't go into lengthy analysis or detail however, preferring to concentrate upon expounding useful principles for game situations.

Chapter Three offers sage advice for middle game maneuvers, covering combination play, how to create weak spots in your opponent's position, sacrifices, rook play, isolated pawns, etc. Endgame strategy is then taken up, with ideas from real and hypothetical games involving various configurations and divisions of material. A final section analyzes 12 selected master games in which the tactics of Alekhine, Botvinnik, Bronstein, Capablanca and other aces can be studied. Of the first edition of this work, Dr. Emanuel Lasker, world champion for 27 years, wrote: "No player can study this book without increasing his playing strength; and even first-rank exponents will find much to interest them." Novice and expert alike should definitely become acquainted with this volume.

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BY LEONARD BARDEN

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Written by a well-known British master and chess correspondent, the book packs an enormous amount of material into its pages and gives you a quick, easy-to-follow course of instruction. The first part explains the rules and describes the pieces and their moves, defines terms, etc. Numerous examples and diagrams illustrate the text and help the novice to obtain a firm grasp of fundamentals. These 30-odd pages will enable him to sit down and play immediately.

The remainder of the book concentrates on the building of skills by the use of tactical principles. Barden handles the problem of openings effectively: he discusses actual game situations in detail and shows what and what not to do, and why; two typical openings (Hungarian Defense, Queen's Gambit) are looked at fairly thoroughly. The middle and endgame are also examined, and he shows ways to deal with common situations. Two final chapters analyze a full game, explaining why each move was made.

The emphasis throughout the latter part on the isolation of patterns and recurrent positions (and away from memorization) gives the beginner greater comprehension and flexibility. No handier or more effective entry to the game is available in English.

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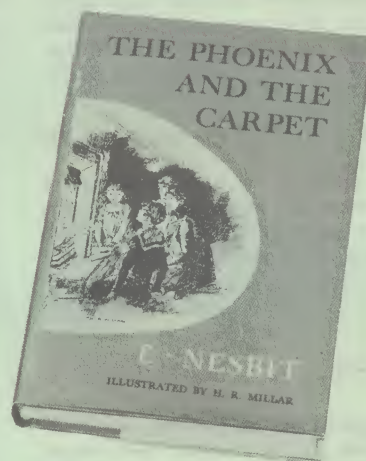
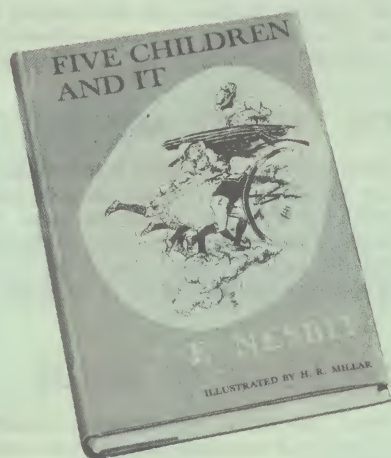
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Presidents Fillmore, Pierce, Jackson, and Lincoln, and dozens of unidentified men, women and children dressed and posed in the height of fashion; such places as Harvard College, New York's Broadway in 1857, the ruins of Richmond after the Civil War, Boston from the air in 1860; and many of the great events of the era, including the building of the Union Pacific railroad, wagon trains heading West, Confederate dead at Gettysburg, the 1876 Philadelphia Centennial, and much more.

Of course, the technical aspect of photography's history is not ignored. As a chemist, Professor Taft was interested in early techniques and a lot of original research went into his book. Covering the entire period, up to the development of modern processes that make possible our picture magazines and newspapers and to early attempts to produce motion, he describes clearly the advances made by Draper, Wolcott, Morse, Muybridge, Hamilton Smith, Talbott and dozens of others. And his story of what happened when a bank clerk named George Eastman ruined his wardrobe by spilling photographic chemicals on it ushers in the era of rolled film and amateur photography.

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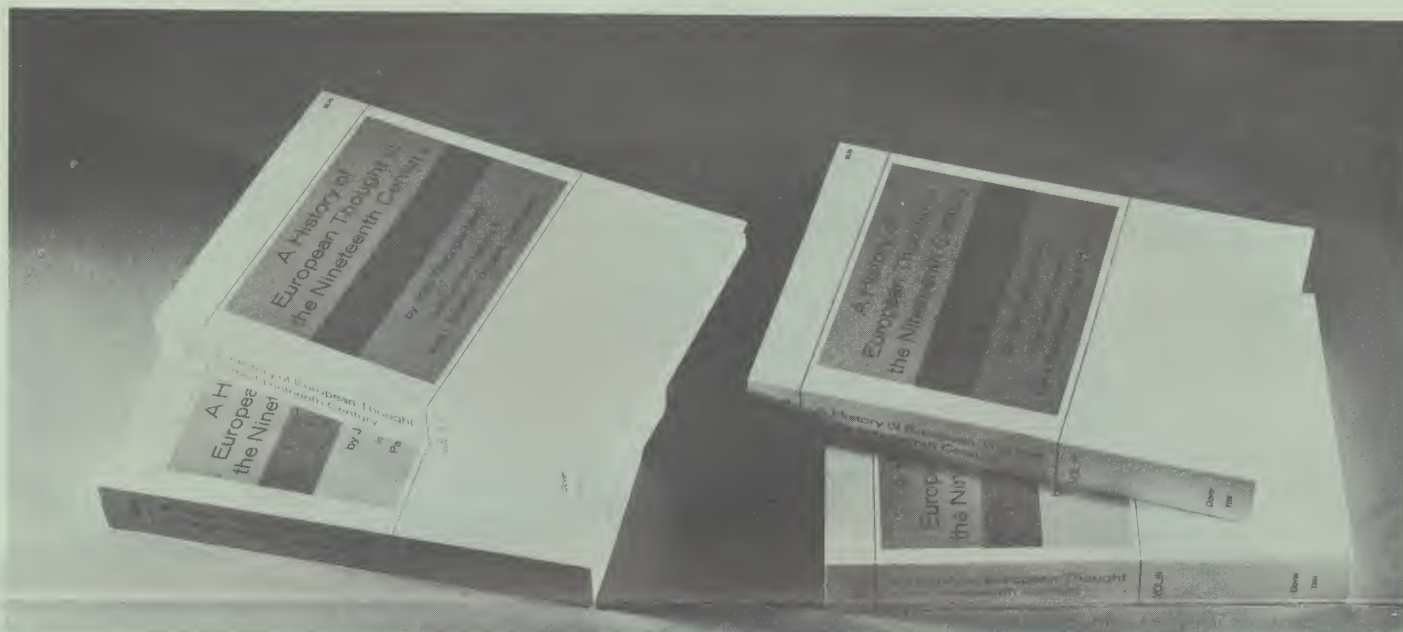
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